WHAT IS CLAIMED IS:

1. A method of manufacturing a thin film transistor device, said method comprising:

providing a substrate;

forming a copper alloy line on said substrate, said copper alloy line including a concentration y of magnesium, and said copper alloy line having a thickness t, wherein the concentration y of magnesium in relation to the thickness t of said copper alloy line is

$$y \leq \frac{94}{t}$$

; and

heat-treating said copper alloy line in an oxygen atmosphere.

2. The method of claim 1, wherein said heat-treatment is performed at a temperature in the range of about 250°C to about 500°C and in a vacuum in the range of about 5 mTorr to about 5 Torr.

3. The method of claim 1, wherein said heat-treatment is carried out at a temperature of about 350°C and in a vacuum of about 10 mTorr.

4. The method of claim 1, wherein said step of heat-treating is peformed using Ar plasma.

5. The method of claim 4, wherein the temperature during said Ar plasma heat-treating is about 100°C.

6. The method of claim 1, wherein a concentration of oxygen contained in the copper alloy line is less than about 1 atomic percent.

7. A method of manufacturing a thin film transistor, said method comprising:

providing a substrate;

forming a gate electrode made of copper alloy on said gate electrode having a thickness t, and said gate electrode including a concentration y of magnesium, wherein the concentration y in relation to the thickness y is

$$y \leq \frac{94}{t}$$

;

heat-treating said gate electrode in an oxygen atmosphere so as to form an oxidation film on the upper surface of said gate electrode;

forming an active layer on the oxidation film;

forming an ohmic contact layer on the active layer; and

forming source and drain electrodes on the ohmic contact layer.

8. The method of claim 7, further comprising the step of forming a silicon nitride film between the oxidation film and the active layer.

9. The method of claim 7, wherein the heat-treatment is carried out at a temperature in the range of about 250℃ to about 500℃ and in a vacuum in the range of about 5 mTorr to about 5 Torr.

10. The method of claim 9, wherein the step of heat-treating is carried out at a temperature of about 350℃ and in a vacuum of about 10 mTorr.

11. The method of claim 7, wherein said step of heat-treating said gate electrode is performed using Ar plasma.

12. The method of claim 11, wherein said step of heat-treating with Ar plasma is performed at a temperature of about 100°C.

13. The method of claim 7, wherein a concentration of oxygen contained in the copper alloy line is less than about 1 atomic percent.

14. A method of manufacturing a thin film transistor device, said method comprising:

providing a substrate;

forming a copper alloy line on said substrate; and

forming an oxidation film on the upper surface of said copper alloy line;

wherein said copper alloy line includes magnesium of y concentration and having a thickness t, wherein the concentration y of magnesium in said copper alloy line in relation to the thickness t is as follow:

$$y \leq \frac{94}{t}$$